



Institute of
Biomedical
Science

Other Occupational Diseases

From Canary Girls and chimney sweeps to miners, stone cutters and silo fillers, these are classic exemplars of the subtle (and in some cases not so subtle) effects that substances, environments and practices can have on individual health.

Non-laboratory healthcare and other workers

- In 1915 Reid researched the incidence of TB in non-laboratory health workers and found cases /1000 as follows:
 - Pathologists - 5.5
 - Chest physicians and surgeons - 4.0
 - Other medical - 0.66
 - Auxiliary Staff - 1.6
- In 2016 in France, Gohanno found the incidence of TB in nurses to be 0.075/1000, similar to the general population.

Podiatrists

- Susceptible to hypersensitivity reactions to dust from nails resulting from the use of grinding burrs
 - Includes asthma, allergic rhinitis and conjunctivitis
- Podiatrists have high levels of precipitating antibodies to the most common cause of nail dystrophy, *Trichophyton rubrum*.

Radium Girls

- In 1898, radium was discovered by Marie and Pierre Curie and purified as a metal in 1911.
- In 1917, the US Radium Company produced a radium-infused paint.
- Used to paint numbers on clock and watch dials that glowed in the dark.
- In order to produce fine details, the women undertaking this work licked their brushes.
- They developed jaw abnormalities, severe anaemia, leukaemia and sarcomas.
- In 1927, five seriously affected 'Radium Girls' were awarded \$10,000 compensation and \$600 a year for medical and living expenses.



Marie Curie was a double Nobel Laureate, in Physics (1903) and Chemistry (1911).

Chimney sweeps

- Percival Pott, a surgeon at St Bartholomew's Hospital in London, published his findings on the high incidence of scrotal cancer in young chimney sweeps, which he attributed to contamination with soot.
- This excellent epidemiological study is considered to be the first report of a potential carcinogen.
- Pott's work led to the foundation of occupational medicine and the 1834 Chimney Sweep Act

Canary Girls and Canary Babies

- During the First World War, a shortage of munitions led in 1915 to the 'shell crisis'.
- The Munitions of War Act 1915 brought all private ammunition companies under Government control.
- Four-thousand munitions companies employed over 1,000,000 women, whose conditions of work, wages and hours were strictly controlled.
- Over 300 deaths occurred as a result of the high incidence of explosions.
- Silk clothing was banned to prevent sparks from static electricity, as were metal hair clips
- TNT manufacture involved nitric and sulphuric acids, the fumes from which turned both skin and hair yellow, thus 'Canary Girls'.
- Toxic jaundice was reported in 400 women, 100 of whom died.
- Pregnancy gave rise to yellow babies, 'Canary Babies'.

Hypersensitivity pneumonia

- Pneumonia is an occupational disease of farmers (Farmer's lung), compost workers and bird fanciers (Pigeon Fanciers Lung, Bird Fanciers Lung) occurring from exposure and inhalation of spores or proteins.
- Farmer's Lung was first reported in 1713. In 1932, Campbell described the condition in dairy farm workers handling mouldy hay.
- Hypersensitivity pneumonia affects 0.4-0.7% of the farming community in the United States.
- In the UK the incidence is reported to be 420-3000 cases per 100,000 with a fatality rate of 0-20%.
- Owing to improvements in farming technique, Farmer's lung is on the decline.

Causes and pathogenesis of hypersensitivity pneumonias.

Farmer's Lung	Exposure to spores of <i>Trichosporon asahii</i> and <i>Trichosporon mucroides</i>
Compost workers	Exposure to spores of <i>Saccharopolyspora rectuspepsis</i> and <i>Emmonium amstelodami</i>
Pigeon and Bird Fanciers Lung	Inhalation of bird proteins (eg droppings, feathers etc).

Silo filler's disease

Silo fillers are at particular risk from chemical pneumonitis from exposure to oxides of nitrogen (particularly nitrous oxide) that build up within the grain silo. First described in 1800 it was not named.

- Large silos were first constructed in 1875 and the first fatalities associated with silo gases were recorded in 1914.
- The amount of gas produced depends on the amount of nitrate within the stored seed.
- Nitrate concentrations are found at rates of 7.5% in weeds, 5.5% in corn, 4.0% in oats, wheat, barley and rye, 3.0% in bromo and 1.0% in alfalfa.



Coalworkers pneumoconiosis resulted in 29,000 deaths in 1990 and 25,000 deaths in 2013.

Miners and stone cutters

- Miners and stone cutters have suffered over the years from pneumoconiosis and silicosis.
- Respiratory problems from breathing dust dates back to the ancient Greeks and Romans. Agricola in 1550 wrote about lung problems from dust inhalation in miners.
- These diseases have been known in history as miners phthisis, grinder's asthma and potter's rot.
- Ramazzini in 1713 noted asthma-like symptoms and sand-like substances in the lungs of stone cutters.
- The pneumatic hammer drill (1897) and sandblasting (1904) led to an increase in the prevalence of silicosis.
- Coalworkers pneumoconiosis resulted in 29,000 deaths in 1990 and 25,000 deaths in 2013.
- Pneumoconiosis and silicosis have been associated with an increased risk of tuberculosis, lung cancer, and some autoimmune diseases including scleroderma, systemic lupus erythematosus and rheumatoid arthritis.



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Electricians and construction workers

- Exposure to asbestos has been recognised as extremely dangerous.
- Merewether found that the greater the exposure to asbestos fibres the greater the risk of developing mesothelioma. All asbestos types carry the risk of developing lung disease.
- In 2015 a total of 157,000 persons were recorded as having asbestosis, and 3600 had died.

Sewer workers

- Sewer workers are in an occupation at particular risk because of the nature of the environment in which they work.
- Gastroenteritis is likely to be the most common risk but the serious problem historically is Weil's disease (the most serious form of leptospirosis), resulting in serious jaundice, liver failure and death.
- Two other disease risks include hepatitis A and an allergic olefinitis.

Was Lewis Carroll's 'Hatter' Mad or Poisoned?

- In the 19th century, mercuric nitrate was used to remove hair from the skin of animals such as rabbits.
- The hair was shaped into felt cones, then shrunk in boiling water.
- Treated fells released volatile mercury, which had a toxic effect on hatters and milliners, resulting in erethism.
- Symptoms of erethism include delirium, hallucinations, irritability and excitability.



Occupational Health: Work and Play Can Make You Sick

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